

IN THE CLAIMS:

1. (Original) A polarizing conversion device, comprising:

a polarizing separation element having a light incident side, a light emergent side, a polarizing separation plane that separates P and S polarized beams by transmitting one of the P and S polarized beams therethrough toward the light emergent side of the polarizing separation element and reflecting the other of the P and S polarized beams, and a reflecting plane disposed substantially parallel with said polarizing separation plane that reflects the other of the P and S polarized beams reflected by said polarizing separation plane toward the light emergent side of the polarizing separation element;

a selective phase plate disposed at the light emergent side of said polarizing separation element that aligns a polarization direction of one of the P and S polarized beams separated by said polarizing separation element with a polarization direction of the other of the P and S polarized beams, and

a device for preventing light from directly entering said reflecting plane disposed at the light incident side of said polarizing separation element.

2. (Original) The polarizing conversion device according to claim 1, wherein the device for preventing light from directly entering said reflecting plane includes at least one of a shading device and an optical attenuating device.

3. (Original) The polarizing conversion device according to claim 2, wherein said shading device is a reflecting plate.

4. (Original) The polarizing conversion device according to claim 2, wherein said shading device is a reflecting film, and said reflecting film is formed on a light incident surface of the light incident side of said polarizing separation element.

5. (Original) The polarizing conversion device, according to claim 2, wherein said optical attenuating device is a light diffusing plate.

6. (Original) The polarizing conversion device according to claim 2, wherein said optical attenuating device is a light diffusing surface formed on a light incident surface of the light incident side of said polarizing separation element.

7. (Original) The polarizing conversion device according to claim 1, wherein said device for preventing light from directly entering said reflecting plane and said polarizing separation element are integrated with each other.

8. (Amended) A polarizing illumination device, comprising:
a light source that emits a light beam;
a first optical element that separates the light beam emitted from said light source into a plurality of intermediate beams that converge at a converging position; and
a second optical element disposed at or near the converging position, the second optical element including:

[a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams;]

a polarizing separation element that spatially separates each of the intermediate beams into an S polarized beam and a P polarized beam, the polarizing separation element including a light incident side, a light emergent side, a polarizing separation plane that separates P and S polarized beams by transmitting one of the P and S polarized beams therethrough toward the light emergent side of the polarizing separation element and reflecting the other of the P and S polarized beams, and a reflecting plane disposed substantially parallel with said polarizing separation plane that reflects the other of the P and S polarized beams reflected by said polarizing separation plane toward the light emergent side of the polarizing separation element;

a selective phase plate that aligns a polarization direction of one of the P and S polarized beams separated by said polarizing separation element with a polarization direction of the other of the P and S polarized beams;

a superimposing lens that superimposes the polarized beams; and

a device for preventing each of the intermediate beams from directly entering said reflecting plane interposed between said first optical element and said polarizing separation element.

9. (Original) The polarizing illumination device according to claim 8, wherein the device for preventing each of the intermediate beams from directly entering said reflecting plane includes at least one of a shading device and an optical attenuating device.

10. (Original) The polarizing illumination device according to claim 9, wherein said shading device is a reflecting plate.

11. (Original) The polarizing illumination device according to claim 9, wherein said shading device is a reflecting film and said reflecting film is formed on a light incident surface of the light incident side of said polarizing separation element.

12. (Amended) The polarizing illumination device according to [claim 9,] claim 47, wherein said shading device is a reflecting film and said reflecting film is formed on a light emergent surface of said condenser lens array.

13. (Original) The polarizing illumination device according to claim 9, wherein said optical attenuating device is a light diffusing plate.

14. (Original) The polarizing illumination device according to claim 9, wherein said optical attenuating device is a light diffusing surface formed on a light incident surface of the light incident side of said polarizing separation element.

15. (Amended) The polarizing illumination device according to [claim 9,] claim 47, wherein said optical attenuating device is a light diffusing surface formed on a light emergent surface of said condenser lens array.

16. (Original) The polarizing illumination device according to claim 8, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said polarizing separation element.

17. (Amended) The polarizing illumination device according to [claim 8,] claim 46, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said condenser lens array.

18. (Amended) A display apparatus, comprising:
a light source that emits a light beam;
a first optical element that separates the light beam emitted from said light source into a plurality of intermediate beams that converge at a converging position;
a second optical element disposed at or near the converging position, the second optical element including:

[a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams;]

a polarizing separation element that spatially separates each of the intermediate beams into an S polarized beam and a P polarized beam, the polarizing separation element including a light incident side, a light emergent side, a polarizing separation plane that separates P and S polarized beams by transmitting one of the P and S polarized beams therethrough toward the light emergent side of the polarizing separation element and reflecting the other of the P and S polarized beams, and a reflecting plane disposed substantially parallel with said polarizing separation plane that reflects the other of the P and

S polarized beams reflected by said polarizing separation plane toward the light emergent side of the polarizing separation element;

a selective phase plate that aligns a polarization direction of one of the P and S polarized beams separated by said polarizing separation element with a polarization direction of the other of the P and S polarized beams,

a superimposing lens that superimposes the polarized beams; and

a device for preventing each of the intermediate beams from directly entering said reflecting plane interposed between said first optical element and said polarizing separation element; and

a modulating device for modulating a light beam emitted from said second optical element.

19. (Twice Amended) A [projection display apparatus,] projector, comprising:

a light source that emits a light beam;

a first optical element that separates the light beam emitted from said light source into a plurality of intermediate beams that converge at a converging position;

a second optical element disposed at or near the converging position, the second optical element including:

[a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams;]

a polarizing separation element that spatially separates each of the intermediate beams into an S polarized beam and a P polarized beam, the polarizing separation element including a light incident side, a light emergent side, a polarizing separation plane that separates P and S polarized beams by transmitting one of the P and S polarized beams therethrough toward the light emergent side of the polarizing separation element and reflecting the other of the P and S polarized beams, and a reflecting plane disposed

substantially parallel with said polarizing separation plane that reflects the other of the P and S polarized beams reflected by said polarizing separation plane toward the light emergent side of the polarizing separation element;

a selective phase plate that aligns a polarization direction of one of the P and S polarized beams separated by said polarizing separation element with a polarization direction of the other of the P and S polarized beams;

a superimposing lens that superimposes the polarized beams; and

a device for preventing each of the intermediate beams from directly entering said reflecting plane interposed between said first optical element and said polarizing separation element;

at least one modulating device for modulating a light beam emitted from said second optical element according to display information; and

a projection optical system for projecting the light beam modulated by said modulating device onto a projection plane.

20. (Amended) The [projection display apparatus] projector according to claim 19, further comprising:

color light separation system for separating the light beam into a plurality of colored lights;

a plurality of said modulating devices for respectively modulating the colored lights; and

colored light synthesizing system for synthesizing the colored lights modulated by said plurality of modulating devices;

wherein a synthesized beam synthesized by said colored light synthesizing system is projected onto said projection plane through said projection optical system.

21. (Amended) The [projection display apparatus] projector according to claim 19, wherein said at least one modulating device is a reflection-type device.

22. (Original) A method of converting randomly polarized beams into substantially one type of polarized beams, comprising the steps of:

separating P and S polarized beams with a polarizing separation element by transmitting one of the P and S polarized beams through a separation plane of the polarizing separation element toward a light emergent side of the polarizing separation element, reflecting the other of the P and S polarized beams with the separation plane, and reflecting the other of the P and S polarized beams reflected with the separation plane toward the light emergent side of the polarizing separation element with a reflecting plane that is disposed substantially parallel with the polarizing separation plane;

aligning a polarization direction of one of the P and S polarized beams separated by the polarizing separation element with a polarization direction of the other of the P and S polarized beams with a selective phase plate disposed at the light emergent side of the polarizing separating element; and

preventing light from directly entering the reflecting plane with at least one of a shading device and an optical attenuating device.

23. (Original) The method according to claim 22, wherein the light is prevented from directly entering the reflecting plane with a reflecting plate..

24. (Original) The method according to claim 22, wherein light is prevented from directly entering the reflecting plane with a reflecting film that is formed on a light incident surface of a light incident side of the polarizing separation element.

25. (Original) The method according to claim 22, wherein light is prevented from directly entering the reflecting plane with a light diffusing plate.

26. (Original) The method according to claim 22, wherein light is prevented from directly entering the reflecting plane with a light diffusing surface formed on a light incident surface of a light incident side of the polarizing separation element.

27. (Original) A polarizing conversion device, comprising:

means for separating P and S polarized beams, including a separation plane, a reflecting plane, a light incident side and a light emergent side, by transmitting one of the P and S polarized beams through the separation plane toward the light emergent side, reflecting the other of the P and S polarized beams with the separation plane, and reflecting the other of the P and S polarized beams reflected with the separation plane toward the light emergent side with the reflecting plane;

means for aligning a polarization direction of one of the P and S polarized beams separated by the means for separating with a polarization direction of the other of the P and S polarized beams; and

means for preventing light from directly entering the reflecting plane.

28. (New) The display apparatus according to claim 18, wherein the device for preventing each of the intermediate beams from directly entering said reflecting plane includes at least one of a shading device and an optical attenuating device.

29. (New) The display apparatus according to claim 28, wherein said shading device is a reflecting plate.

30. (New) The display apparatus according to claim 28, wherein said shading device is a reflecting film and said reflecting film is formed on a light incident surface of the light incident side of said polarizing separation element.

31. (Amended) The display apparatus according to claim 50, wherein said shading device is a reflecting film and said reflecting film is formed on a light emergent surface of said condenser lens array.

32. (New) The display apparatus according to claim 28, wherein said optical attenuating device is a light diffusing plate.
33. (New) The display apparatus according to claim 28, wherein said optical attenuating device is a light diffusing surface formed on a light incident surface of the light incident side of said polarizing separation element.
34. (Amended) The display apparatus according to claim 50, wherein said optical attenuating device is a light diffusing surface formed on a light emergent surface of said condenser lens array.
35. (New) The display apparatus according to claim 18, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said polarizing separation element.
36. (Amended) The display apparatus according to claim 49, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said condenser lens array.
37. (Amended) The projector according to claim 19, wherein the device for preventing each of the intermediate beams from directly entering said reflecting plane includes at least one of a shading device and an optical attenuating device.
38. (New) The projector according to claim 37, wherein said shading device is a reflecting plate.
39. (New) The projector according to claim 37, wherein said shading device is a reflecting film and said reflecting film is formed on a light incident surface of the light incident side of said polarizing separation element.
40. (Amended) The projector according to claim 53, wherein said shading device is a reflecting film and said reflecting film is formed on a light emergent surface of said condenser lens array.

41. (New) The projector according to claim 37, wherein said optical attenuating device is a light diffusing plate.

42. (New) The projector according to claim 37, wherein said optical attenuating device is a light diffusing surface formed on a light incident surface of the light incident side of said polarizing separation element.

43. (Amended) The projector according to claim 53, wherein said optical attenuating device is a light diffusing surface formed on a light emergent surface of said condenser lens array.

44. (New) The projector according to claim 19, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said polarizing separation element.

45. (Amended) The projector according to claim 52, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said condenser lens array.

46. (New) The polarizing illumination device according to claim 8, the second optical element, further comprising:
_____ a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams.

47. (New) The polarizing illumination device according to claim 46, the device to prevent each of the intermediate beams from directly entering said reflecting plane including at least one of a shading device and an optical attenuating device.

48. (New) The polarizing illumination device according to claim 8, the superimposing lens being a lens array that includes a plurality of lenses.

49. (New) The display apparatus according to claim 18, the second optical element, further comprising:

a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams.

50. (New) The display apparatus according to claim 49, the device to prevent each of the intermediate beams from directly entering said reflecting plane including at least one of a shading device and an optical attenuating device.

51. (New) The display apparatus according to claim 18, the superimposing lens being a lens array that includes a plurality of lenses.

52. (New) The projector according to claim 19, the second optical element, further comprising:

a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams.

53. (New) The projector according to claim 52, the device to prevent each of the intermediate beams from directly entering said reflecting plane including at least one of a shading device and an optical attenuating device.

54. (New) The projector according to claim 19, the superimposing lens being a lens array that includes a plurality of lenses.